

Claims:

1. A process for developing an imaged lithographic plate having regions that are soluble and regions that are insoluble in a developer fluid, by applying developer fluid over the entire plate to dissolve the soluble regions of the plate and rinsing the plate to remove the developer and dissolved material, wherein the improvement comprises applying the developer fluid by contacting the plate with a self-leveling flow of developer fluid to produce a uniform film of developer fluid on the plate and maintaining the developer fluid in contact with the plate for a period of time until the soluble regions are dissolved, without relative movement between the plate and the applied developer during said period.

2. The process of claim 1, wherein the plate is maintained in a stable horizontal orientation during the development period and the soluble regions are dissolved by vertical vectors of development.

3. The process of claim 1, wherein the step of contacting consists of depositing a thin film of developer as a continuous vertical curtain from a source of developer to the plate.

4. The process of claim 1, wherein the step of contacting consists of depositing a multiplicity of jets of developer perpendicularly to the plate surface.

5. A process for developing a positive working lithographic plate having an imaged coating by applying an alkaline developer solution to dissolve the soluble imaged areas of the coating and rinsing the plate to remove the developer and dissolved material, the improvement wherein the step of applying developer consists of contacting the coating with a self-

leveling flow of developer and maintaining the developer in contact with the coating for a period of time until the imaged areas are dissolved without relative movement between the plate and the applied developer during said period.

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6. The process of claim 5, wherein the step of contacting consists of depositing a thin film of developer as a continuous vertical curtain from a source of developer to the plate.

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7. The process of claim 5, wherein the step of contacting consists of depositing a multiplicity of jets of developer perpendicularly to the plate surface.

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8. The process of claim 5, wherein the plate is conveyed horizontally by a flat belt beneath a Mayer rod that deposits the developer vertically onto the plate.

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9. The process of claim 5, wherein the step of applying developer forms a film of developer having a thickness in the range of 2-10 mils and the plate is conveyed throughout said period across a substantially horizontal support structure.

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10. The process of claim 5, wherein the step of applying developer forms a thin film of developer and comprises:

conveying said plates across a substantially horizontal support structure;

jetting a self-leveling uniform layer of developer solution onto the imaged coating with a jetting printhead to dissolve the soluble areas of the coating and produce a spent developer solution and developed plate and;

removing said spent developer solution from said developed plate and discharging said spent developer solution to waste.

5 11. A process for developing a multiplicity of imaged positive working lithographic plates, comprising:

- (i) sequentially supporting the plates in a uniform horizontal orientation;
- (ii) depositing a film of developer on each plate;
- 10 (iii) maintaining quiescence of the film relative to the plate for a period of time sufficient to dissolve the imaged areas of the plate; and
- (iv) rinsing the plate to remove the developer and dissolved material.

15 12. The process of claim 11, wherein at least some of said sequentially supported plates are unconditioned.

20 13. A process for developing a positive lithographic printing plate having an imaged coating comprising areas of coating soluble in a developer solution, said method adapted to remove said soluble coating from said plate, comprising the steps of:

conveying the plate along a path across a substantially horizontal support structure;

25 applying developer solution to said plate to produce a developed plate and spent developer solution;

wherein said step of applying developer solution includes:

- a. providing a horizontal cylindrical hollow wire-wound tube having a plurality of apertures along the length on one side thereof across said path; and

5 b. feeding developer solution into said horizontal cylindrical hollow wire-wound tube and thereby overflowing said developer solution from said cylindrical hollow tube through said plurality of apertures by volumetric displacement whereby said developer solution flows down said wire-wound tube onto said imaged coating in a continuous vertical curtain that forms a self-leveling film.

10 14. The process of claim 13, wherein the film of developer is applied to a uniform thickness in the range of 2-10 mils.

15 15. The process of claim 13, comprising the step of maintaining quiescence of the film before removing said spent developer solution from said developed plate.

16. The process of claim 15, wherein said step of removing said spent developer solution comprises rinsing said developed plate with water.

20 17. The process of claim 13, including detecting the leading and trailing ends of said plate and controlling said feeding of developer solution in response thereto.

25 18. The process of claim 13, wherein said step of feeding developer solution comprises pumping said developer solution with a peristaltic pump.

30 19. A process for developing a lithographic printing plate having an imaged coating comprising areas of coating soluble in a developer solution, said method adapted to remove said soluble coating from said plate and comprising:

conveying an unconditioned positive working plate along a path across a substantially horizontal support structure;

applying developer solution to said plate to produce a developed plate and spent developer solution;

5 wherein said step of applying developer solution includes:

- a. mounting a horizontal cylindrical wire-wound member across said path;
- b. mounting a horizontal hollow tube having a plurality of apertures along the length on one side thereof above
10 said wire-wound member; and
- c. feeding developer solution into said tube and thereby overflowing said developer solution from said tube through said plurality of apertures by volumetric displacement and causing said developer solution to flow
15 down said tube onto said wire-wound member and form a self-leveling film on said plate.

20. The process of claim 19, comprising the step of maintaining quiescence of the film before removing said spent developer solution from
20 said developed plate.

21. The process of claim 20, wherein said step of removing said spent developer solution comprises rinsing said developed plate with water.

25 22. The process of claim 19, further including detecting the leading and trailing ends of said plate and controlling said feeding of developer solution in response thereto.

23. The process of claim 19, wherein said step of feeding developer solution comprises pumping said developer solution with a peristaltic pump.

5 24. A process for developing imaged positive lithographic printing plates having soluble areas of coating comprising conveying means for moving said plates across a substantially horizontal support structure, means for applying developer solution to said imaged plates whereby said soluble areas of coating are dissolved in said developer solution to produce
10 spent developer solution and developed plates, and means for removing said spent developer solution from said developed plates wherein said method comprises:

- a. printhead jetting said developer solution onto said plates to form a self-leveling film;
- 15 b. feeding said developer solution to said printhead means;
- c. activating said printhead means to jet developer solution in response to the presence of a plate under said printhead means and deactivating said printhead means in response to the absence of a plate under said
20 printhead means; and
- d. maintaining quiescence of the film relative to the plate while the soluble areas of the plate are dissolved.

25 25. A process for developing unconditioned, positive, imaged lithographic printing plates having soluble areas of coating comprising conveying means for moving said plates across a substantially horizontal support structure and means for applying developer solution onto said plates whereby said soluble areas of coating are dissolved wherein said method comprises:

- a. printhead jetting said developer solution onto said plates to form a self-leveling film;
- b. feeding said developer solution to said printhead means;
- c. activating said printhead means to jet developer solution in response to the presence of a plate under said printhead means and for deactivating said printhead means in response to the absence of a plate under said printhead means; and
- d. maintaining quiescence of the film relative to the plate while the soluble areas of the plate are dissolved.

26. The process of claim 25, wherein the step of applying forms a film of developer having a thickness in the range of 2-10 mils and the step of maintaining quiescence includes conveying said plates across a substantially horizontal support structure.

27. The process of claim 26, wherein said jetting printhead is stationary.